REMARKS

Applicant would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action, and amended as necessary to more clearly and particularly describe the subject matter which applicant regards as the invention.

Claims 1-26 remain in the application. Claims 1-6 and 18-23 stand rejected under 35 USC 102(b) as being anticipated by U.S. Patent 6,467,605 to Head (hereinafter Head '605). For the following reasons, the Examiner's rejections are traversed.

The present invention is directed to a method of supplying workpieces to workstations using an autoloader. The method includes receiving one or more signals from individual workstations; signal types including call signals, ready signals, and error signals. From a group of received call signals, the oldest call signal that has not been responded to and has not come from a workstation that has also transmitted an error signal is responded to first. Response includes moving a selected workpiece from an input area to the selected workstation that transmitted the selected call signal. A ready signal or error signal is sought from the selected workstation. If a ready signal is found, the selected workpiece is loaded into the selected workstation. If instead an error signal is found, the process starts over and the next oldest call signal is responded to. Accordingly, the present invention is directed toward a manufacturing environment wherein multiple workstations are available to perform the same manufacturing or machining task (i.e. parallel manufacture).

Head '605 discloses an automated computer controlled assembly line preferably for use in the manufacture of semiconductor circuits and devices, but also for automobile, engine and tire manufacturing and assembly. This method of operation is particularly useful where assembly lines or portions of assembly lines are comprised of machines placed side by side in a row. Manufacturing or processing takes place by transporting a workpiece from work station to work station and from machine to machine. The workpiece is stopped at the various work stations of each machine and operations are performed on the workpiece. The workpiece is then transported to another work station of the same machine or the next machine in the line. Thus, the Head '605 method is directed toward a manufacturing environment in which each part is worked on at each work station (i.e., sequential or serial manufacture). Via asynchronous operation a workpiece may be processed at each work station regardless of the status of any other workpiece or work station in the line. In operation, a computer system controller will process a request from a downstream work station requesting a workpiece from an upstream work station.
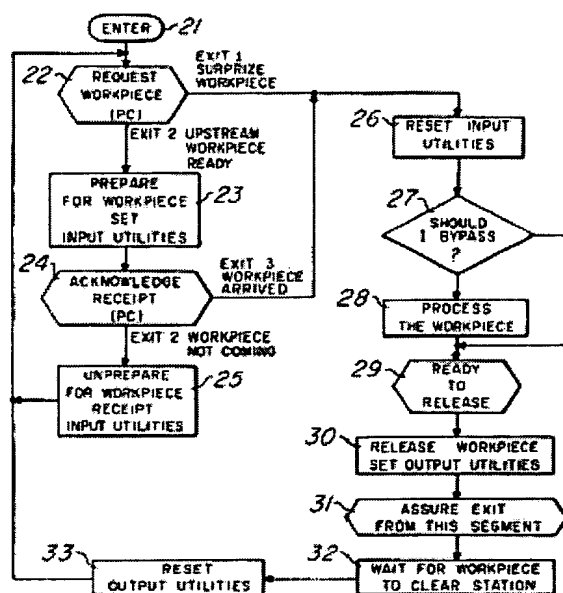
Fig. 1

Once the upstream workpiece is ready to be sent, the downstream work station

will be prepared for its receipt. After receipt of the workpiece at the downstream work

station, an acknowledgement is provided. Regarding errors in the system, if a work

station is declared inoperative, the work stations of the same machine may continue

their work function until workpieces in them are brought to a safe condition. When the

workpieces are in a safe condition in all of the work stations of the machine, the

machine is declared inoperative and an operator will be alerted so that the machine can

be repaired and returned to service without damaging any workpieces other than

possibly the one workpiece in the failed segment.

With regard to claim 1, the Head '605 reference fails to disclose within its

methods a step whereby "for all received call signals, determining a selected one of the

call signals, which is the oldest one of the call signals that has not been responded to

and has not come from a workstation that has also transmitted an error signal" and

further "responding to the selected one of the call signals by moving a selected one of

the workpieces from an input area to a selected one of the workstations, which is the

workstation that transmitted the selected one of the call signals" as required. Head '605

does not disclose a configuration where numerous call signals are received from

various work stations, but rather describes more of a patterned system where the

progression of work from a first station or stations to a next station is predetermined

and known.

Additionally, Head '605 does not disclose moving a workpiece to a work station

calling for the workpiece, but not immediately loading the workpiece into the

workstation. As a result Head '605 does not then disclose "if a ready signal has been

received from the selected one of the workstations, loading the selected one of the

workpieces into the selected one of the workstations" as required by claim 1 and the

claims depending therefrom. Instead, Head '605 discloses maintaining a workpiece at

an upstream workstation until the upstream workstation has completed its operation

and then, when both the upstream and downstream workstations are prepared to

commence a transfer, the workpiece is directly loaded into the downstream work

station. Accordingly, it is submitted that the method of claim 1 is not anticipated by

Head '605.

With additional regard to claim 3, Head '605 does not teach or suggest "moving

the carriage with the worked-upon one of the workpieces to a drop-off station; and

depositing the worked-upon one of the workpieces in the drop-off station" as required.

Head '605 simply teaches moving the workpieces from one station to another without

any sort of dedicated drop off position. Accordingly, the method defined in claim 3 is not anticipated by head '605.

With additional regard to claim 6, Head '605 does not disclose the use of a modern autoloader. An autoloader has the flexibility to supply workpieces to work stations in a fixed sequence which is continuously repeated (e.g. MC1, MC2, MC3, MC1, MC2, MC3) or in a sequence dictated by vacancy at a workstation. Thus, if a single workstation completes operations more quickly than others, or alternatively encounters an error condition, that workstation can be fed more frequently or avoided altogether, respectively.

In view of the statements above, Applicant requests reconsideration and withdrawal of the rejections of claim 1 and claims 2-6 depending directly therefrom.

With regard to claim 18, as previously stated with respect to claim 1, Head '605 does not disclose supplying workpieces to "workstations based on the chronological order of the receipt of the call signals from the workstations, such that the workstation that transmits a first received one of the call signals is supplied with one of the workpieces first" as required. As previously stated, Head '605 discloses a patterned processing sequence, not a situation where multiple calls requiring prioritization are received. Reconsideration and withdrawal of the rejection of claim 18 is requested.

With regard to claim 19, as previously stated, Head '605 does not disclose moving a workpiece to a work station and waiting at that workstation until the absence of an error signal is confirmed before loading the workpiece into the workstation. Further Head '605 does not disclose, "moving said one of the workpieces to a next one of the workstations that transmitted a call signal that was received subsequent to the

call signal from said one of the workstations" if "said one of the workstations has transmitted an error signal." Reconsideration of claim 19, and claim 20 that depends therefrom, is requested.

With regard to claim 21, for either the first or second zone a step wherein for all received call signals from the workstations, "determining a selected one of the call signals which is the oldest one of the call signals that has not been responded to and has not come from a workstation that has also transmitted an error signal" is a step not disclosed by Head '605, as previously stated during the discussion of claim 1. Reconsideration and withdrawal of the rejection of claim 21 is requested.

With regard to claim 22, as previously stated, Head '605 does not disclose moving a workpiece to a work station and waiting at that workstation until the absence of an error signal is confirmed before loading the workpiece into the workstation. Reconsideration and withdrawal of the rejection of claim 22, and claim 23 that depends therefrom, is requested.

Claims 7-17 and 24-26 stand rejected under 35 USC 103(a) as being obvious in view of Head '605. For the following reasons, the Examiner's rejections are traversed.

Claims 7, 8, 14 and 15-17 depend directly from claim 1. As previously stated regarding claim 1, the Head '605 reference fails to disclose within its methods a step whereby "for all received call signals, determining a selected one of the call signals, which is the oldest one of the call signals that has not been responded to and has not come from a workstation that has also transmitted an error signal" and further "responding to the selected one of the call signals by moving a selected one of the workpieces from an input area to a selected one of the workstations, which is the

workstation that transmitted the selected one of the call signals." Rather, as noted previously, Head '605 teaches a computer system controller that will simply process a request from a downstream work station requesting a workpiece from an upstream work station. The teachings of Head '605 also do not suggest these steps in the claimed method of operation. Rather, Head '605 would have to be modified to arrive at the method defined in claim 1, from which claims 7, 8, and 14-17 depend. Insofar as the Examiner has not indicated any suggestion or motivation to support modification of the Head '605 teachings, it is considered apparent that a prima facie case of obviousness has not been established. Reconsideration and withdrawal of the rejection of claims 7, 8, 14 and 15-17 is requested.

With regard to claim 9, Head '605 does not teach or suggest moving a workpiece to a work station and waiting at that workstation until the absence of an error signal is confirmed before loading the workpiece into the workstation. Rather, Head '605 teaches not moving the workpiece at all from an upstream location until the downstream workstation is prepared for receipt. Reconsideration and withdrawal of the rejection of claim 9 and claim 10 that depends therefrom is requested.

With regard to claim 11, Head '605 does not teach or suggest "moving the carriage with the worked-upon one of the workpieces to a drop-off station; and depositing the worked-upon one of the workpieces in the drop-off station" as required. Head '605 simply teaches moving the workpieces from one station to another without any sort of dedicated drop off position. Reconsideration of claim 11 and claims 12 and 13 that depend therefrom is requested.

Claims 24-26 depend directly or indirectly from claim 21. As previously stated

during the discussion of claim 21, for either the first or second zone a step wherein for all received call signals from the workstations, "determining a selected one of the call signals which is the oldest one of the call signals that has not been responded to and has not come from a workstation that has also transmitted an error signal." The teachings of Head '605 also do not suggest this step in the claimed method of operation. Rather, as noted previously, Head '605 teaches a computer system controller that will simply process a request from a downstream work station requesting a workpiece from an upstream work station. Reconsideration and withdrawal of the rejection of claims 24-26 is requested.

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 18-0160, our Order No. HON-14852.

Respectfully submitted,

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